

have the second highest injury rates, exceeded only by 18- and 19-year-olds. Investigations by the US Occupational Safety and Health Administration (OSHA) reveal that each year about 100 children younger than 18 years are fatally injured at work and half of these are engaged in work activities prohibited by the Fair Labor Standards Act.

Morbidity data for work-related injuries are not available on a national basis by age, but New York State Workers' Compensation claims for 1980 to 1987 showed 9,656 work injuries in adolescents, and 43% of the claims were for permanent disability. Injury rates were lower in children than in adult workers, but the part-time nature of child and adolescent work makes comparison of rates difficult. Child workers may be less likely than adults to be covered by the Workers' Compensation system or to use the system to file a claim after an injury.

Children with work-related injuries present to physicians and to emergency departments in a manner similar to children in nonwork-related injuries. Although work injuries in children are not required to be reported by health care personnel, health care professionals can voluntarily report suspected violations of child labor laws to the Wage and Hour Division of their state department of labor. For example, a 16- or 17-year-old might be treated for injuries sustained in a motor vehicle crash while attempting to deliver pizza. The Fair Labor Standards Act prohibits such employment before age 18, regardless of the age at which a state issues a driver's license. These injuries and the name of the employer should be reported to the Wage and Hour Division for investigation. Except in the case of severe injuries, written referrals or complaints are more likely than telephone reports to result in investigations.

Work-related events are a substantial contributor to injury morbidity in older children and adolescents. Better data would help delineate this problem. Coordination between Wage and Hour inspectors, who enforce child labor laws, and OSHA would improve enforcement. Parents, teachers, and physicians should be aware of the hazards to working children.

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## Prevention in Managed Care

ALTHOUGH MANAGED CARE ORGANIZATIONS seem to have unique advantages for providing superior prevention and early detection services, these advantages are rarely realized. This is difficult to understand because the required cost investments are dwarfed by those made routinely for new medical technologies and procedures.

A population-based perspective is the best way to pro-

vide prevention and early detection services. That is, service delivery should be designed to enhance the health of all of an organization's members. This may require structural changes in the organization, cultural and practice changes among the employees, developing user-friendly mechanisms for linking various databases, a process for ongoing evaluation, and committing resources necessary to start the process. There is evidence that patient cost-sharing reduces the use of necessary preventive services. To the extent that a managed care plan reduces or eliminates cost sharing for prevention, it can encourage the appropriate use of these services.

For example, consistent physician advice more than doubles the proportion of smokers who quit. Adding a brief nurse intervention after physician advice nearly doubles the effect of physician advice alone on long-term quit rates. The effectiveness of these interventions has been demonstrated; cost-effectiveness data show these practices to be more effective in saving years of life than most common medical practices. And yet, few medical care organizations integrate them into practice.

The benefits of increasing preventive services in other areas is less clear. For example, optimal breast and cervical cancer screening frequencies have been hotly debated. Guidelines have been developed and educational programs mounted to encourage screening at the appropriate times. But studies show that most cancers occur among persons who rarely, if ever, are screened; increasing the recommended screening frequency will not help such people, although it will dramatically increase costs. The cost of saving a year of life with cervical cancer screening at three-year intervals has been estimated at \$120,000 and for screening at one-year intervals at well over \$1 million. The cost-effectiveness of prevention depends on choosing the appropriate target population for the preventive service being offered.

Managed care organizations have the population base and the opportunity to link outpatient, inpatient, laboratory, and radiographic databases along with questionnaire data to develop low-cost automated systems that focus resources where they are most needed. For behavioral interventions such as smoking, models exist that add little, if any, time to an outpatient visit. But they require a structure for identifying the risk status, motivating and supporting intervention, and tracking progress (interest in and attempts at quitting). For screening studies, systems almost always exist for identifying persons in the base population who have not received a service for a specified interval beyond the optimal (often called a "safety net"). A systematic, automated outreach program can be used to encourage these persons to come in for the service. Because the safety-net interval is longer than the optimal interval, the costs of outreach are low and are limited to those persons at highest risk (such as those who rarely receive screening).

Finally, while preventive services delivered in the clinic are important, the major determinants of health and illness are lifestyle behaviors that can be addressed by community-based health promotion. Such community-

based approaches can enhance the effect of clinical preventive services.

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## Routine Smoking Cessation Intervention in Health Care Systems

TOBACCO-RELATED ILLNESS and death is the largest public health epidemic of our times and, as such, warrants the application of population-based methods that have been the hallmark of successful public health programs. Whereas taxation, regulation, media reports, and other community approaches have been used to address this issue, smoking cessation interventions in health care systems, such as hospitals and outpatient clinics, should become an important component of the struggle against tobacco-induced disease. Medical system interventions have the potential to reach most smokers at a "teachable moment," without waiting for smokers to volunteer for more intensive group cessation intervention. (An estimated 70% of smokers visit a physician's office annually, and perhaps 25% or more receive inpatient services.)

Many research studies support the value of brief clinical interventions for tobacco use. These interventions include routine assessment of tobacco use in all patients, strong advice to quit, brief cessation counseling—including setting a quit date and prescribing pharmacologic aids as appropriate, state-of-the-art self-help materials, and follow-up support. These approaches produce long-term cessation in both outpatient and inpatient settings. Recent community-based data suggest, however, that smoking interventions that rely solely on physician initiatives are not systematically applied or sustainable in the real world of community practice. In fact, fewer than 50% of patients report they have ever been advised by their physicians to quit or cut down. Physicians often judge counseling interventions as important but relatively ineffective and outside their training. Smoking assessment and lifestyle counseling have not commonly been a part of medical education and practice; physicians striving to incorporate these practices face skill and habit barriers in addition to the obstacles posed by a work setting with time and resource limitations.

Incorporating systems for assessment, intervention, and follow-up into routine practice is a more effective method for improving smoking cessation success than simply relying on individual physicians and their willing-

ness or ability to change practice patterns. Further, the most effective intervention systems are those that offer a range of options for quitting and involve physicians and nonphysicians alike. Smoking interventions provided by teams that include physicians and nonphysician clinical staff have recently been shown to be practical and acceptable in outpatient and inpatient settings. The use of nurses, health educators, respiratory therapists, and other available clinical staff to provide most intervention and follow-up elements minimizes the demands on physicians, spreads responsibility for the intervention across clinical staff, and increases the likelihood that the intervention will continue to be provided. Another method to encourage and sustain systematic smoking intervention in a medical setting is to identify it as a quality indicator.

According to recent estimates, more than 3 million smokers a year would quit if physicians could help only 10% of their smoking patients to quit. Because the tobacco industry successfully recruits about a million new smokers per year, the integration of systematic, low-intensity interventions throughout the medical care system could contribute substantially to achieving the nation's Healthy People 2000 smoking objectives.

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## *Vibrio vulnificus* Hazard in Patients With Liver Disease

*Vibrio cholerae* has been long recognized as a human pathogen, but only in recent years has the pathogenicity of other Vibrionaceae been recognized. Eleven species of *Vibrio* are now known to be capable of causing serious human illness. Among these, *Vibrio vulnificus* is the most important in the United States.

*Vibrio vulnificus* is a naturally occurring marine bacterium found most often in warm ocean waters, such as the Gulf of Mexico. Humans may be exposed to the bacteria by swimming or wading in seawater or by eating raw seafood. Eating raw oysters is now recognized as the primary mode of acquiring *Vvulnificus* infection in the United States. Indeed, *Vvulnificus* has emerged as the leading cause of death from food-borne illness in some areas of the country.

In the 12-year period 1981 through 1992, 72 cases of *Vvulnificus* infection from eating raw oysters were reported in Florida; half of these persons died. These 36 deaths accounted for 80% of all food-borne deaths in Florida during this period. (Of note, eight of the nine other food-borne illness fatalities in Florida during these 12 years were due to infection with other *Vibrio* species.)